Space Weather Forecast

Issued on Tuesday, 17 May 2022 at 13:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Minor to Moderate radio blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the past 24 hours with a Moderate flare observed at 16/1327UTC. There are a number of sunspot groups on the visible side of the solar disc, with two regions of note. The first is the largest region in the northeast disc, with some slight complexity and showing sign of growth. The other is a moderately sized region, and the only sunspot group in the southwest disc but is showing some sign of decay. No Earth directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has been Elevated for much of the past 24 hours due to fast winds related to a coronal hole. The magnetic field has been Weak to Moderate in strength, with the important north-south component varying between the two directions, but with periods of moderately southward (negative) pointing field, especially after 0400. Geomagnetic activity was Quiet to Unsettled (Kp 1 to 3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Moderate, with an ongoing chance of further Moderate flares, and a very slight chance of Strong flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Current elevated solar winds may decline over the next couple of days, before the arrival of the fast winds of another coronal hole. This is currently expected late on day 2 (18th) or early day 3 (19th), however this is a low confidence forecast. Geomagnetic activity is currently Quiet with isolated Unsettled spells, Activity may increase Unsettled to Active for a time, this most likely later on day 2 (18th) or early day 3 (19th). Elevated solar winds are then expected to persist day 4 (20th) with Quiet to Unsettled geomagnetic activity.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring. There is a slight chance of this count rate increasing due to any notable flares, most likely from the sunspot on the southwest disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	20	20	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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